been widespread, and it will be long before he ceases to be a living force and passes to the position—honourable as it is—of an historical figure in physiological science.

Gaskell cared little for public ceremonies, and rarely attended the congresses which beset the path of prominent scientific men. He loved to work quietly, to cultivate his garden, to see his friends, and to take a hand at whist or bridge. His house at Great Shelford was a recognised meeting-place for physiologists, and his frank and genial welcome will be an abiding recollection to all who knew him. J. N. LANGLEY.

NOTES.

WE learn from a paragraph in the *Times* of September 19 that the question of abandoning honorary degrees received from English universities, and distinctions from learned societies, is being discussed by some German professors. Prof. W. Förster, professor of astronomy in the University of Berlin, who holds a doctor's degree at Oxford, takes objection to the movement in a letter to the *Berliner Tageblatt,* on the ground that it is unwise to proclaim a divorce from the "learned world" of England because of England's "wicked policy." It would be better for the German professors to make a strong appeal to their English friends for "a more effective loyalty to the intellectual community." Protests against Prof. Förster's views promptly came from Profs. Eucken and J. Kohler, who hold chairs of philosophy and law respectively. In connection with this question we are glad to print elsewhere in this issue a letter from Dr. J. P. Lotsy asking scientific men who have received honours from universities, or other learned institutions of nations with which their own countries are at war, not to commit the act of renunciation advocated by certain representatives of German learning.

WE are glad to see in Tuesday's *Times* a letter from Prof. J. A. Fleming dissociating scientific work from the spirit of Prussian militarism. In the course of his letter, Prof. Fleming says:—"No one familiar with the achievements of scientific thought would refuse to admit the indebtedness of the world to such thinkers and workers as Jacobi, Gauss, Bessel, Riemann, H. F. Weber, von Helmholtz, Kirchhoff, Hertz, and Röntgen, but the fact is quite as astonishing as it is painful that a nation which has made such contributions to the upbuilding of natural philosophy should have permitted itself also to be dominated by an immoral militarism by whose votaries sheer brute force is worshipped as the highest virtue and the only source of national advancement. Side by side with immense ability in creating and applying scientific knowledge we have an almost complete failure to recognise truth, honour, faith-keeping, and justice as the foundations of national greatness. Germany has no greater need at the present moment than some inspired prophet to enforce on her the truths of which Thomas Carlyle was so eloquent an exponent—namely, that physical force is in the long run impotent unless backed by those spiritual forces which spring only from loyalty to the everlasting difference between right and wrong."

WE learn with regret that Dr. H. J. Johnston-Lavis, professor of vulcanology in the Royal University of Naples, was killed in a motor accident at Bourges early this month.

WE regret to announce the death of Sir Henry G. Howse, at one time senior surgeon to Guy's Hospital, and president of the Royal College of Surgeons, England. He was eminently a practical surgeon, making numerous contributions to the medical literature of his time. Some years ago he retired from active practice, and settled near Sevenoaks, Kent, where he enjoyed a well-earned leisure. He was in his seventy-third year.

THE death is announced at Louth, Lincs., of Mr. George Gresswell, formerly lecturer in physical science, under the Government of the Cape of Good Hope, at the Diocesan College, Rondebosch, and demonstrator of practical physiology and histology at Westminster Hospital. Mr. Gresswell was the author of a number of books and papers, including several on the theory of evolution.

FROM telegraphic messages issued through Reuter's Agency we learn that the United States Revenue cutter *Bear* on September 8 rescued eight members of Mr. Stefánsson's Canadian Arctic Expedition, who were marooned on Wrangel Island. It is reported that Mr. Mallock, the geologist, and Mr. Mamen, the topographer to the expedition, died on Wrangel Island. The absence of news leads to the fear that M. H. Blanchet, of Paris, Dr. A. Mackay, and Mr. James Murray, other members of the expedition, may have been lost. Mr. Stefánsson himself and three others are said to be safe and to be drifting towards King William Land.

SIR ERNEST SHACKLETON and the members of the Trans-Antarctic Expedition left London on September 18. Those members of the expedition proceeding to the Ross Sea travelled *viâ* Tilbury for Tasmania; the others, the Weddell Sea section, included Sir Ernest Shackleton, and embarked for South America. The Ross Sea party expects to sail from Hobart in the *Aurora*. The Weddell Sea contingent hopes to leave Buenos Aires on October 18 by the *Endurance*. After landing its party the *Endurance* will return to the Falkland Islands, whence news of the explorers may be expected next January. If Sir Ernest Shackleton's land party does not cross the Antarctic Continent during the first season it has been arranged that the *Aurora* shall winter in the Ross Sea. Sir Ernest Shackleton hopes to meet the Ross Sea party either in April of next year, or, failing that, in March, 1916.

UNIVERSITY COLLEGE, Galway, has, during the summer vacation, suffered a great loss by the death of Prof. R. J. Anderson, professor of natural history in the college. Dr. Anderson was greatly beloved by his colleagues and his students. He was a genuine scholar, with few interests outside the world of science. With his wife (a sister of Prof. John Perry, of South Kensington) he was a constant attendant at the meetings of the British Association and the British Medical Association. He graduated in the Queen's University of Ireland, and afterwards studied at London, Leipzig, Paris, Heidelberg, and Naples. For eight years he was lecturer on anatomy and assistant professor of physiology in Queen's College, Belfast, and for more than twenty-five years he occupied the chair of natural history in Galway. He was co-editor of the *International Journal of Anatomy and Physiology*; was an honorary president at Lisbon Medical Congress, Sec. Intermediate I.; an honorary president at Buda Pesth Medical Congress, Sect. Board II.; a vice-president Anatomical Section, British Medical Association, at Glasgow. He made a speciality in his studies of vertebræ skeleton and mammalian morphology. His published works include "The Elephants" (1895), "The Whales and Dolphins" (1896), "Chelonia" (1912), and "German Influence: Intellectual and Moral" (1896). Dr. Anderson graduated M.A. with the highest honours in the Queen's University, and at the examination for the M.D. degree of that University he obtained first place, the Peel scholarship, and a gold medal. He was a member of the Royal College of Surgeons (England).

IN *Man* for August Dr. S. N. Shannus describes a form of iron-smelting furnace used by the Angonis of Nyasaland. The furnace is about 10 ft. in height, bottle-shaped, and made of clay, supported by wooden poles let into the ground, bound round the outside. At the base there are eight holes through which earthenware pipes having an internal diameter of 3 in. are inserted to create the draught. The furnace is built on a slight slope, which allows of a hole being made at the lower side from which the slag escapes. A rough platform of logs is made up against the upper side for the convenience of those filling the furnace. It is filled almost to the neck with charcoal, which is ignited from the top, and a mixture of charcoal and iron-stone in equal proportions is added at intervals. The operation lasts for two days, when an opening is made at the base of the furnace, and the iron, which has collected in a circular trough at the bottom, is extracted.

MR. A. D. PASSMORE discusses in *Man* for August the reason for the absence of large flint implements in Gloucestershire. In this district there is no indigenous flint, and the raw material was probably imported from Wiltshire. In Wiltshire, where flint is common, a man who broke a large axe could afford to throw the pieces away and pick up a fresh lump to replace it. But in Gloucestershire the reverse would be the case, and the pieces would immediately be used up to make arrowheads, scrapers, and the like. At Windmill Hill, near Avebury, Wilts, flakes and pieces of flint which were once obviously parts of axes have been found in great numbers. It has been supposed, in order to explain this fact, that a successful invading race of bronze-using people went round after the conquest smashing up the flint weapons of their victims. This is, he thinks, more probably due to the fact that working material of tried value was used in preference to that which was not tried, and the fragments were the waste remaining after the conversion of broken implements into smaller articles. As a parallel, he quotes the case of a repairer of old furniture using an old table-top which bore a peculiar yellow polish, with the result that small pieces bearing this peculiar polish could be picked up in all corners of the workshop.

IN the report of the Otago University Museum for 1913 it is recorded that considerable additions have been made to the Hocken library, the principal contributors being Mrs. Hocken herself and Mr. Trimble. The curator laments that school teachers neglect the opportunities offered by the museum for instruction in nature-study.

ACCORDING to the report for the year ending June 30, 1914, the most important recent addition to the natural section of the Warrington Museum is the herbarium of the late Mr. W. Hodge, of Northwich, which was acquired by purchase. It includes 931 sheets of flowering plants, representing 824 species, and 121 sheets, with 115 species, of mosses, together with five volumes of notes. Nearly half the specimens were collected locally.

THE biology of humble-bees and honey-bees and the various forms of cells constructed by different kinds of wasps are discussed by Mr. O. J. Lie-Pettersen in the combined July and August number of *Naturen*. Another article on bees appears in the August issue of the Proceedings of the Philadelphia Academy, in which the author, Dr. N. E. McIndoo, describes the scent-producing organ of these insects. This organ, situated between the fifth and sixth abdominal segments, is furnished with gland-cells, which were long considered to be for the purpose of secreting perspiration, but their true function was pointed out by Sladen in 1902. Apparently these glands secrete a volatile substance, which collects in a special reservoir (ampulla), whence it passes through a chitinous tube to a canal on the dorsal surface of the abdomen. So long as the abdomen remains straight, the canal is well protected, and the liquid can only evaporate slowly; but directly this part of the body is strongly flexed, the entire canal is more or less fully exposed to the air, in which the odour of the evaporating fluid becomes rapidly diffused.

A GEOLOGICAL map of Nova Scotia in one sheet, on the scale of one inch to eight miles, has been issued by the Geological Survey of Canada. The Palæozoic sequence is remarkably complete. While the crystalline rocks of Cape Breton Island are clearly pre-Cambrian, a Devonian granite is prominent in the south-west of the country, where it forms the watershed. North-west of it, the coastline of the Bay of Fundy is moulded on the strike of a long band of Triassic dolerite.

DR. F. R. VON HUENE, of Tübingen, summarises the conclusions of his recent work on Dinosaurs in the *American Journal of Science*, vol. xxxviii. (1914), p. 145. He urges that the dinosaurs are not a natural order, and that Seeley's two divisions, the Saurischia (= Theropoda + Sauropoda) and Ornithischia (= Orthopoda), were separately derived from the Pseudosuchia. References are given to his three papers published in Germany in the present year.

THE production of amphibolites, rocks rich in hornblende, felspar, lime-garnet, etc., through the alteration of limestone invaded by a granitic magma, presents features of chemical as well as geological interest. A notable addition to the work done in France, Canada, and elsewhere is made by P. P. Sustschinsky (*Trav. Soc. imp. Naturalistes St. Pétersbourg,* vol. xxxvi., livr. v.), who illustrates a number of examples of contact-alteration from south-west Finland. A German summary is provided.

THE memoir of the Geological Survey of England and Wales on the geology of the northern part of the Derbyshire coalfield (price 3*s*.), by W. Gibson, C. B. Wedd, G. W. Lamplugh, and others, will be of interest to many besides professed geologists. The area includes Matlock and the famous Creswell Caves, rich in Pleistocene mammalia, and excellent photographs are given of this land of limestone crags. L. Moysey contributes classified lists of Coal-Measure fossils, occupying twenty-two pages, which will be of service to workers throughout central England.

THE stratigraphy of New Zealand has been so retarded, and, it may be added, confused, by the imperfection of the palæontological data, that we welcome the Palæontological Bulletin No. 1, issued by the New Zealand Geological Survey. In this quarto memoir, J. A. Thomson brings together materials for the palæontology of New Zealand, including a list, with references, of all the known pre-Cretaceous fossil species of the country. Plates that have been long in stock are now issued with this publication. We note what is perhaps an appeal to a new group of helpers in national scientific work in the addition of Maori names for the islands, and for New Zealand itself, in the two topographical maps that are so well provided.

So much interest has been attracted to the antarctic regions that it may be well to mention a paper published in the *Cairo Scientific Journal,* vol. viii. (1914), p. 77, by H. T. Ferrar, who accompanied the *Discovery* in 1901. The summary of geological conclusions indicates the occurrence of both "Atlantic" and "Pacific" types of crust-structure in the antarctic continent. The author urges that the shrinkage of the glaciers is due to decreased precipitation on the higher ground, and that the cause of this is "a general lowering of the temperature of the polar atmosphere." It must be remembered, on the other hand, that ice-sheets may be nourished by small annual precipitation, provided that the conditions are cold enough to reduce the loss by evaporation and ablation. Geographers may overlook this paper in an Egyptian journal, and may also be glad of a reference to a description by W. Bellows, accompanied by a good panoramic photograph, of the rarely seen arctic island of Jan Mayen. This appeared in the Proceedings of the Cotteswold Naturalists' Field Club, vol. xvii., p. 333.

WITHIN less than a year seismology has lost two of its leading students. Prof. Milne died on July 31, 1913, and Prof. G. Mercalli, through fire in his house at Naples, on March 19, 1914. Born on May 21, 1850, and therefore only a few months older than Milne, Mercalli's attention was concentrated at an early age on the study of volcanoes and earthquakes. His first important work was that on the "Vulcani e fenomeni vulcanici in Italia" (1883), which formed the third part of the "Geologia d'Italia" by G. Negri, A. Stoppani, and G. Mercalli. In partnership with Prof. T. Taramelli, who contributed the geological parts of the reports, he studied the Andalusian earthquake of 1884 and the Riviera (Ligurian) earthquake of 1887. In 1902, he proposed the modification of the Rossi-Forel scale of seismic intensity which now bears his name, and is widely, almost universally, used throughout Italy. As a seismologist, Mercalli will perhaps be remembered chiefly for his contributions to the physiographic side of his science. He prepared a general catalogue of Italian earthquakes from 225 B.C. to A.D. 1859, and the generosity of his disposition is shown by the help which he gave to Dr. Baratta in the work by which this catalogue has now been superseded. One of his earliest detailed studies of earthquakes was that on the destructive Ischian earthquake of 1883; and he has since (1897) published important memoirs on the earthquakes of Liguria and Calabria. Few, if any, of the Italian volcanoes have escaped the attention of Mercalli, but to the Vesuvian phenomena he devoted unremitting study for a period of about twenty years. An admirable summary of his scientific work by Dr. E. Oddone appears in the last *Bollettino* of the Italian Seismological Society (vol. xvii., pp. 245–262).

IN view of the unfortunate interruption to the useful work of the international exploration of the upper air, owing to the war now raging over Europe, it is satisfactory to note that there are several stations in the British Isles at which such observations are regularly made. The annual supplement of the *Geophysical Journal,* 1912, recently published by the Meteorological Office, contains a summary of the records of registering balloon ascents at six stations, and additional data not included in the monthly issues. The results of fifty-two successful ascents were published during the year in question, and it is stated that there was scarcely a single failure in obtaining a trustworthy record up to at least 10 km., but that the year was an unfortunate one in the matter of finding the balloons. The more salient features of each ascent are brought together in one table and expressed in international units, from which, among other interesting results, it is seen that the mean height of the base of the stratosphere was 10 km., and the corresponding temperature 218·5° A. (273° A.=0° C.); temperature at the mean maximum height reached (14·7 km.) 221°; mean temperature of the air column between 1 and 9 km., 251·8° It should be noted that most of the ascents were made in the summer season. Out of the falling points of the balloons there were twenty-two in the S.E. and fourteen in the S.W. quadrant; the preponderance of falls in the former quadrant agrees with continental observations.

IN the Memoirs of the Indian Meteorological Department (vol. xxi., part ix.), Dr. G. T. Walker publishes a short note on the criterion for the reality of relationships or periodicities. If an attempt is made to correlate a pair of variable quantities there is a certain measure of correlation to be expected even in the absence of any definite relationship. This measure must be sensibly exceeded if the result actually found is to be treated as an indication of causal connection. When, however, a whole set of correlations is determined the fortuitous element will occasionally be largely exceeded without indicating a real relation. Similarly, when a complete periodogram is investigated the largest ordinate must exceed the probable measure by a large factor if the corresponding periodicity is to be regarded with any confidence. The outcome of Dr. Walker's paper is a table giving the ratios of the greatest of an assigned number of (1) accidental correlation coefficients, (2) amplitudes of periodicities, to the probable value of a single one. The note illustrates the need for extreme caution in interpreting the results of work of this kind. But it does not touch the real difficulty of periodogram analysis. This consists, in the language of the optical analogy, in the occurrence of banded spectra. Until this feature becomes amenable to sound interpretation, the periodogram method, always painfully laborious, is likely to remain absolutely sterile.

FROM the recently issued report of the Government Chemist (Cd. 7562) we learn that a large number of determinations of the salinity of sea-water were made last year at the Government Laboratory, for the information of the Permanent International Council dealing with the exploration of the sea. More than four thousand samples of sea-water were taken by steamships on various routes and by lightships round the coast, and forwarded for examination. The data relating to the specimens from the Atlantic routes are published with the monthly charts issued by the Meteorological Office. It is noted in the report that the chemical work of the Geological Survey is in future to be performed by the staff of the Government Laboratory, and arrangements have been made for this purpose. During the year an extensive series of experiments was conducted in connection with the measures to be taken for the preservation of the roof of Westminster Hall; the results are not stated, but a summary of the conclusions arrived at has been published as an appendix to the report of the architect in charge of the work. There is an interesting reference by the Government Chemist to the composition of a series of medieval wax seals, of various dates from the thirteenth to the sixteenth centuries, which were examined for the Record Office. An impression of the Great Seal of 1350 was found to consist of pure beeswax which, although nearly six centuries old, corresponded exactly in properties with wax of recent origin. Among other matters of interest mentioned are some experiments upon the keeping of milk in galvanised-iron vessels: the results showed that at the end of twenty-four hours the milk had dissolved zinc equal to about half a grain per pint, and also traces of antimony and arsenic. There was a large increase in the total number of samples examined last year as compared with the previous year, the respective numbers being 234,754 and 209,502.

PART v. of vol. xxvi. of the Proceedings of the Physical Society of London consists of 114 pages of papers communicated to the society, the index to the volume and the proceedings at meetings of the society during the session 1913–14. Readers of the Proceedings will, we feel sure, cordially welcome the issue of them with their edges cut. It will be noticed that the society has a committee on nomenclature and symbols which makes a provisional report on electric and magnetic symbols in the present number. Communications dealing with electrical subjects show a marked preponderance over those relating to other branches of physics. Of the electrical papers may be mentioned Mr. F. E. Smith's on a variation magnetograph, Mr. F. Mercer's on the arc electric wave generator, Prof. Fleming's on the bending of such waves round the earth, and Sir Joseph Thomson's account of his search for waves still shorter than those hitherto produced. A paper by Mr. T. Barrett deals with the thermal and electric conductivities of rare metals, and one by Prof. Lees with Fourier series and the method of least squares.

PROF. F. C. LEA, of the University of Birmingham, and Mr. O. H. Crowther give an account in *Engineering* for September 18 of some experiments on reinforced concrete beams. In these experiments the longitudinal strains of a part of the beam subjected to uniform bending moment were measured by a special type of extensometer. From the resulting curves, it appears that the ordinary assumption that the distribution of stress is linear on the compression side of the neutral axis is approximately correct. The experiments show also that the modular ratio diminishes as the stress increases, and is slightly higher for the richest mixture than for the poorer mixtures. The evidence so far is opposed to the recent London County Council Regulations, but the authors consider that it is desirable that the experiments should be continued, and have made arrangements for this to be done.

OUR ASTRONOMICAL COLUMN.

A NEW COMET.—It is announced that a bright comet was discovered at the Cape Observatory on September 18. The comet was then near the star Achernar (α Eridani), and therefore invisible in the British Isles.

COMET 1913*f* (DELAVAN).—Comet Delavan is now beginning to diminish more rapidly its northern declination, but is still a circumpolar object, and therefore visible throughout the whole night. It is a conspicuous object to the naked eye, and lies nearly on the prolongation of a line towards the horizon joining the two pointers (α and β) in Ursa Major. This position can be easily found by consulting the chart given in this column for September 3. The comet is steadily increasing in brightness, and its tail has considerably increased in length. The dark nights recently experienced have been verv favourable, both for visual and photographic work, and no doubt a large harvest of data is being collected.

M. Bigourdan, in the *Comptes rendus* for September 7 (tome clix., No. 10), gives some observations for position of this comet which he made at the Paris Observatory on September 2 and 3.